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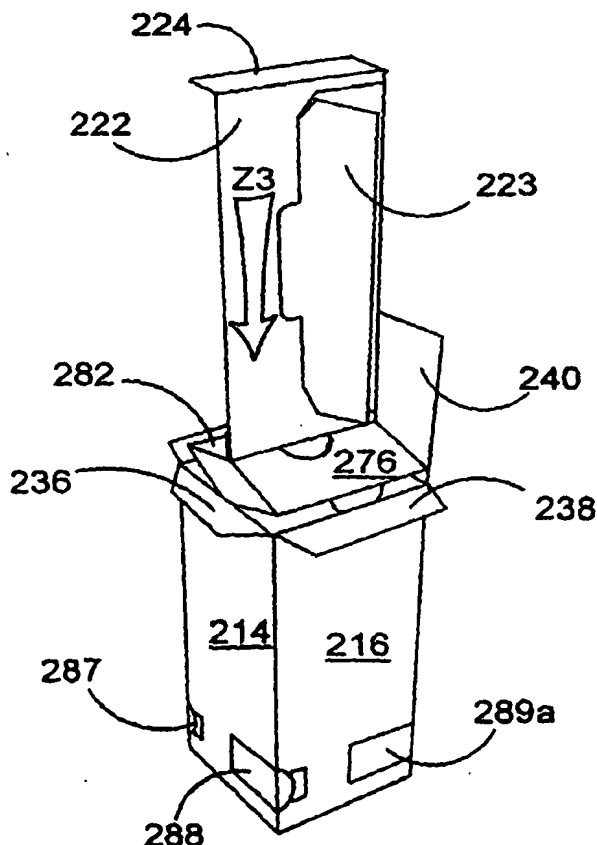
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[Continued on next page]

(54) Title: CARTON AND CARTON BLANKS



(57) Abstract: A carton for packaging articles for example tablets, comprising an outer sleeve (10a, 110a, 210a), an internal partition wall (22, 122, 222) and a cushion structure connected to the partition. The cushion structure comprises a platform panel (42; 176, 182; 276, 282) spaced from one (28, 128, 228) of the walls of the outer sleeve and extending outwardly from one side of the partition wall and access means (86, 186, 286) struck from the outer sleeve to gain access to the carton interior.

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A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B65D5/48 B65D5/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 B65D C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	FR 1 497 652 A (ROCHETTE CENPA) 13 October 1967 (1967-10-13) the whole document	1,4,8,9, 12-14,26 2,3 19
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	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- *A* document defining the general state of the art which is not considered to be of particular relevance
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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- *&* document member of the same patent family

Date of the actual completion of the international search

15 May 2002

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/31827

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 1 898 646 A (TAYLOR ROBERT A) 21 February 1933 (1933-02-21) page 1, line 95 - line 98 page 2, line 121 - line 125; figures</p>	27

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/31827

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,
no additional fees are to be refunded.

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-14 16-18 19-24 28-29

Subject I (claims 1-14, 16-18, 19-24, 28-29) relates to a carton with a partition and a cushion structure.

2. Claim : 15

Subject II (claim 15) relates to a carton having a partition wall, a platform panel extending from one side of the partition wall and a spacer tab.

3. Claim : 25

Subject III (claim 25) relates to a carton having a cushion structure spaced from one wall of the carton by two cushion spacer tabs.

4. Claim : 26

Subject IV (claim 26) relates to a blank for forming a cushion structure. The cushion structure comprises four panels and two spacer tabs.

5. Claim : 27

Subject V (claim 27) relates to a carton having a partition and a bracing tab which cooperate with a support tab.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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(71) Applicant (for all designated States except US): THE
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(72) Inventors; and

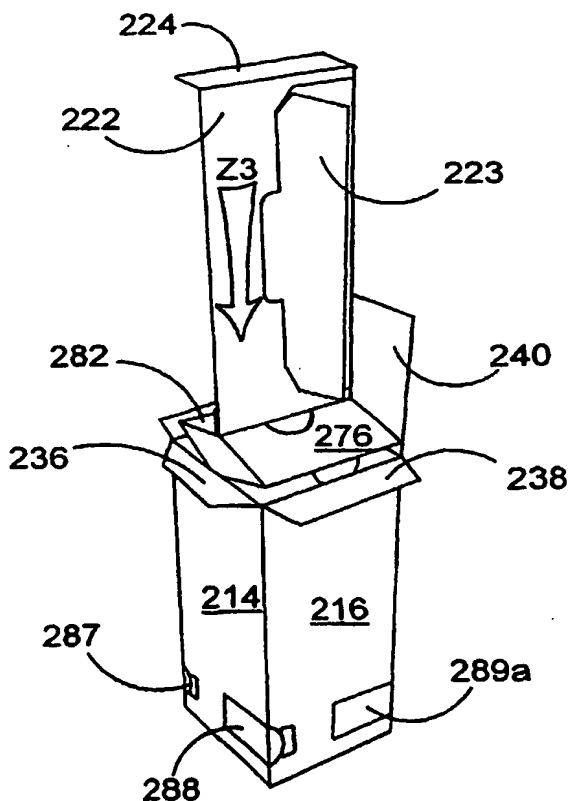
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GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI,
SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU,
ZA, ZW.

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(54) Title: CARTON AND CARTON BLANKS



(57) Abstract: A carton for packaging articles for example tablets, comprising an outer sleeve (10a, 110a, 210a), an internal partition wall (22, 122, 222) and a cushion structure connected to the partition. The cushion structure comprises a platform panel (42; 176, 182; 276, 282) spaced from one (28, 128, 228) of the walls of the outer sleeve and extending outwardly from one side of the partition wall and access means (86, 186, 286) struck from the outer sleeve to gain access to the carton interior.

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CARTON AND CARTON BLANKS

Background of the Invention

The present invention relates to a carton and a carton blank for forming said carton. More particularly, the invention relates to a carton and blank for packaging tablets such as tablets of washing powder or detergent, for example.

US 4 342 405 to Forbes discloses a box having an internal cushion structure, the cushion structure being secured to a side wall and to a top wall via a suspension member and glue panel.

US 1 973 209 to Hooker discloses a box having an internal bottom cushion structure having a suspension member arranged in face contacting relationship with a side panel to maintain the position of the cushion structure.

US 5 156 276 to Lebowitz discloses a box having a cushion structure resting on the base of the box with a circular aperture provided therein and having a cooperating diagonal partition member that extends from the cushion structure to the top of the box.

The prior art does not however disclose a carton whose erection process is susceptible to easy or efficient mechanisation.

Summary of the Invention

The present invention, and its preferred embodiments, seek to overcome or at least mitigate the problems of the prior art.

One aspect of the present invention provides a carton for packaging articles for example

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tablets, comprising an outer sleeve, an internal partition wall and a cushion structure connected to the partition wherein the cushion structure comprises a platform panel spaced from one of the walls of the outer sleeve and extending outwardly from one side of the partition wall and access means struck from the outer sleeve to gain access to the carton interior. Preferably the access means is a tear flap is provided on the outer sleeve. More preferably the tear flap is located such that the lower edge thereof is substantially in register with the platform panel.

According to an optional feature of this aspect of the invention a further platform panel extends outwardly from the other side of the partition wall.

According to a second optional feature of this aspect of the invention the platform panels may be formed integrally.

According to a further optional feature of this aspect of the invention the cushion structure is connected to the partition wall by a bracing tab extending from the partition wall to limit movement of the partition wall. More preferably the bracing tab engages an aperture provided in the platform panel. Even more preferably a support tab is struck from the platform panel and defining, at least in part, the aperture, the support tab is folded when the bracing tab is inserted into the aperture so as to engage the wall of the outer sleeve from which the platform panel is spaced.

According to yet another optional feature of this aspect of the present invention the platform

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panels are formed integrally.

Alternatively separate first and second platform panels are provided. Preferably cushion spacer tabs are provided at the outer edges of the first and second platform panels, so as to space the platform panels from the wall of the outer sleeve.

According to an optional feature of this aspect of the present invention first and second cushion panels are hingedly interconnected to provide a collapsible tubular structure connected to the first and second platform panels respectively.

According to a further optional feature of this aspect of the present invention, a further transverse partition wall is provided in substantially perpendicular relationship to the partition wall. Preferably the transverse partition wall is hingedly connected to the partition wall. More preferably the partition wall is a composite comprising two partition panels, each partition panel having a transverse partition panel hingedly connected thereto.

According to a second aspect of the present invention a carton for packaging articles for example tablets, comprising an outer sleeve, an internal partition wall, a platform panel spaced from one of the walls of the outer sleeve and extending outwardly from one side of the partition wall and a bracing tab formed from a platform panel and extending downwardly from the partition wall to limit movement of the partition wall.

A third aspect of the present invention provides a blank for forming a carton for packaging

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tablets, the blank comprising an outer sleeve portion and inner partition and cushion portions, the partition portion comprising a partition panel having means for connecting to a platform panel of the cushion portion. Preferably the connecting means comprising a connecting tab integral with the partition panel arranged so as to engage a connecting aperture provided in the platform panel. More preferably a spacer tab may be struck from the connecting aperture.

A fourth aspect of the present invention provides a blank for forming an inner partition and cushion structure of a carton for packaging tablets, the blank comprising a partition portion and a cushion portion, the partition portion comprising a partition panel and the cushion portion being hingedly interconnected to the partition portion and comprising in series a first platform panel, first cushion panel, second cushion panel and second platform panel and wherein spacer tabs are provided so as to space the platform panel from a corresponding wall of the carton. Preferably the first and second support tabs are formed integrally with the first and second platform panels. More preferably the first and second support tabs are struck from the first and second cushion panels respectively.

According to an optional feature of the fourth aspect of the present invention a bracing tab is formed integrally with the partition panel.

Preferably the access structure is spaced from the base edge of a panel of the outer sleeve such that the aperture formed, when the access structure is opened enables articles resting on a platform panel of the cushion structure to be removed therefrom.

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A fifth aspect of the invention provides a carton for packaging articles such as tablets comprising an outer sleeve, and a cushion structure, wherein the cushion structure comprises a platform panel spaced from one of the walls of the outer sleeve by first and second cushion spacer tabs hingedly connected to the side edges of the platform panel

According to an optional feature of this aspect the fifth invention a third spacer tab may be formed integrally with the partition panel.

A sixth aspect of the invention provides a blank for forming a cushion structure for cushioning articles within a tubular carton comprising a cushion portion comprising in series a first platform panel, first cushion panel, second cushion panel and second platform panel and wherein spacer tabs are provided so as to space the platform panel from a corresponding wall of the tubular carton.

Brief Description of the Drawings

Exemplary embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIGURE 1 is a plan view of a blank according to one embodiment of the invention;

FIGURES 2A, 2B and 2C are plan views of the blank of Figure 1 at successive stages of the construction of the carton;

FIGURES 3A, 3B and 3C are perspective views of the blank at later stages of the construction process than illustrated at Figures 2A, 2B and 2C;

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FIGURE 4 is a perspective view of the blank of Figure 1 when erected to form a carton;

FIGURE 5 is a partial cutaway view of the carton illustrating the removal of articles therefrom;

FIGURES 6 and 7 are plan views of a two part blank for forming a carton according to a second embodiment of the invention;

FIGURES 8A, 8B and 8C are plan views of the blank of Figure 6 at successive stages of the construction process;

FIGURES 9A, 9B and 9C are plan and perspective views of the blank of Figure 7 at successive stages of construction;

FIGURE 10 is a perspective view illustrating the loading of the partially erected blank of Figure 7 into the partially erected blank of Figure 6;

FIGURE 11 is a partial cutaway perspective view of the fully erected carton formed from the blanks of Figures 6 and 7;

FIGURES 12 and 13 are plan views of a two part blank for forming a carton according to a third embodiment of the invention;

FIGURE 14A, 14B and 14C are plan and perspective views of the blank of Figure 13 at successive stages of construction;

FIGURE 15 is a perspective view illustrating the loading of the partially erected blank of Figure 13 into the partially erected blank of Figure 12; and

FIGURE 16 is a partial cutaway perspective view of the fully erected carton formed from the

blanks of Figures 12 and 13.

Detailed Description of the Preferred Embodiments

Referring to the drawings there is shown a unitary blank and two part blanks formed from paperboard or other like foldable sheet material and capable of being folded and secured into a set up carton for holding one or more articles, for example washing powder tablets or the like.

In the first embodiment shown in Figures 1 to 5, there is a carton formed from a single blank 10. The blank 10 comprises two portions, outer sleeve 10a and inner partition structure 10b.

Turning first to outer sleeve 10a, there comprises a plurality of panels for forming a tubular sleeve, for example a first side wall panel 12, first end wall panel 14, second side wall panel 16 and second end wall panel 18 hingedly interconnected in series along fold lines 46, 48 and 50 respectively. Base wall panel 28 is provided which is preferably hingedly connected to first end wall panel 14 along fold line 60. First and second base end flaps 26 and 30 complete a base wall structure and are preferably hingedly interconnected to first and second side wall panels 12 and 16 along fold lines 58 and 62 respectively.

Top wall structure comprises a top wall panel 40 hingedly interconnected to one of the sleeve panels, for example second end wall panel 18 by fold line 72. Top end flaps 34, 36 and 38 are, in this embodiment, hingedly connected to first side wall panel 12, first end wall panel 14 and second side wall panels 16 along fold lines 66, 68 and 70 respectively.

It should be recognised that in alternative classes of embodiment other known top and/or base closure structures may be employed.

Access means is provided to gain access to the carton interior. In this embodiment, a pair of tear flaps 86 and 88 are provided in the outer sleeve portion 10a, and in this embodiment tab 86 is arranged so as to span fold line 46 between panels 12 and 14 and tab 88 is arranged so

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as to span fold line 50 between panels 16 and 18. The flaps 86 and 88 are preferably arranged so as to reveal an aperture having approximately the same as the height of the articles to be packaged by the carton. The tear flaps are preferably arranged such that the aperture revealed by the tearing operation has a lower edge substantially in alignment with the upper face of platform panel 42 as discussed below. In other classes of embodiment, suitable alternative means may be provided to access the carton interior.

Turning now to partition portion 10b, there is provided in series first partition spacer panel 20, partition panel 22 and, securing means which is provided in this embodiment, by glue panel 24, hingedly interconnected along fold lines 54 and 56 respectively. A bracing tab 84 preferably extends from partition panel 22, preferably the base edge.

A cushion structure is, in this embodiment, hingedly connected to the base edge of second end wall panel 18 along fold line 64. The structure comprises in series, first cushion spacer panel 32, platform panel 42 and second cushion spacer panel 44 hingedly interconnected in series along fold lines 74 and 76 respectively. An aperture 78 is struck from platform panel 42. Preferably support tabs 82a and 82b are struck from and hingedly connected to platform panel 42 along fold lines 80a and 80b and extend into aperture 78. It should be understood that in alternative embodiments, the cushion structure may alternatively be hingedly connected to first end wall panel 14, for example.

Turning now to Figures 2A, 2B and 2C, it is envisaged that the carton of the present invention can be formed by a series of sequential folding and gluing operations in a straight line machine so that the carton is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and may be altered according to particular manufacturing requirements.

Glue is preferably first applied to glue panel 24 for example in the cross-hatched areas G and inner partition portion 10b is then folded about fold line 52 in a direction X1 so as to partially overlie outer sleeve portion 10a. In this embodiment, partition panel 22 is arranged so as to terminate along a notional centre line of second side wall panel 16.

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The glue panel 24 is secured to the outer sleeve by the glue.

The outer sleeve is formed by applying glue G to the outer face of partition spacer panel 20, and panels 12 and 14 are folded about fold line 48 in a direction X2 so as to overlie partition portion 10b with first side wall panel 12 being secured to spacer panel 20. The carton is now in a flat collapsed condition as shown in Figure 2C.

At this stage of construction, the carton may optionally be supplied to the customer in collapsed form for subsequent complete erection on the customer's premises, thereby minimising space required during transport, and hence reducing costs.

Turning to Figures 3A, 3B and 3C, the panels of the collapsed carton are separated so as to form a tabular structure with panels 12 and 16 and 14 and 18 being in mutually opposed substantially parallel relationship. Partition panel 22 further brought into a position mid-way between panels 14 and 18 and is, in this embodiment, in a substantially parallel relationship thereto. In alternative embodiments however, the width of spacer panel 20 may be adjusted such that different sized compartments are formed by the partition within the erected carton.

Top end flaps 34, 36 and 38 and top wall panel 40 are then folded inwardly about fold line 66, 68, 70 and 72 respectively and are secured together using glue or other suitable means. Articles may then be loaded into the two compartments formed by the partition panel. In other embodiments, the base structure may be closed first and articles loaded from the top of the sleeve.

The cushion structure is then folded inwardly in a direction X3 (Figure 3A) about fold line 64 such that cushion spacer panels 44 and 32 partially overlie first and second end wall panels 14 and 18 and such that platform panel 42 is arranged in a substantially perpendicular relationship to the end and side wall panels, as shown in Figure 3B.

As can be see from Figure 3B, the folding motion of the cushion structure causes bracing tab

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84 of the partition panel 22 to protrude through aperture 78 thus causing support tabs 82a and 82b to be pushed out of the plane of platform panel 42 so as to be orientated towards the base of the carton when fully erected. In use, the bracing tab 84 engages aperture 78 to improve rigidity of the partition. The support tabs 82a and 82b assist in providing a cushion structure.

Base end flaps 26 and 30 are then folded inwardly about fold lines 58 and 62 and respectively so as to be in a substantially parallel spaced relationship with platform panel 42. Glue is then preferably applied to flaps 26 and 30 and base wall panel 28 is folded about fold line 60 so as to overlie and be secured to flaps 26 and 30. The support and bracing tabs 82a, 82b, 84 are advantageously dimensioned so as to engage the base wall panel 28 and provide support to the platform panel 42. The fully erected and loaded carton formed from the blank is shown in Figure 4.

To obtain access to the articles A packaged within the carton (which in this embodiment are packets of two tablets), the end user engages the free end of tabs 86 and 88 and tears along the frangible lines to reveal the articles A as shown in Figure 5. Each article may then be slid out from the carton and the remaining articles may then slide down under the influence of gravity onto platform panel 42 into position for each subsequent removal.

It should be appreciated that the cushion structure provides a "crumple zone" which may be deformed if there is an impact between the carton and another body, thus substantially absorbing the energy of such an impact without damaging the articles A within. In order to adjust the deformation characteristics of the cushion structure, the caliper of the paperboard or like materials may be changed and/or the dimensions of the spacer panels adjusted such that a greater or lesser distance between the article and the walls of the carton may be provided. If necessary, a further cushion structure may be provided at the top end of the carton.

Referring now to Figures 6 and 7, there is shown an alternative embodiment of the invention in which like parts have been annotated with like numerals where possible but with the addition of the prefix "1". Figure 6 illustrates the outer sleeve 110a of a two part blank and

Figure 7 illustrates the inner partition 110b of a two part blank.

Referring first to outer sleeve portion 110a, in this embodiment, there comprises in series a first glue flap 111, first side wall panel 112, first end wall panel 114, second side wall panel 116 and second glue flap 120 interconnected in series along fold lines 144, 146, 148 and 150 respectively. Top end flaps 134, 136 and 138 are hingedly connected to panels 112, 114 and 116 along fold lines 166, 168 and 170 respectively.

The remaining panels that form the outer sleeve are, in this embodiment, hingedly connected to first end wall panel 114 along fold line 160 and comprise in series base wall panel 128, second end wall panel 118 and top wall panel 140 hingedly interconnected in series along fold lines 164 and 174. Base end flaps 126 and 130 are further hingedly connected to base wall panel 128 along fold lines 158 and 162. Tear flap 188 and tear flap portions 186a and 186b are struck from the end and side wall panels such that flap 188 spans the fold line 148 between panels 114 and 116. Flap portion 186a spans the fold line 144 between first glue flap 111 and panel 112 and flap portion 186b is struck from second end wall panel 118. It should be understood that the location of the tear flaps may, in other embodiments, be adjusted as necessary.

Turning now to the partition portion and cushion structure as illustrated in Figure 7, this comprises in series partition panel 122, first platform panel 176, first cushion panel 178, second cushion panel 180, second platform panel 182 hingedly interconnected in series along fold lines 191, 192, 193 and 194. Preferably, securing means is provided which in this embodiment is provided by glue flaps 124, 184 hingedly connected to opposing ends of the partition portion along fold lines 190 and 195 respectively. There may further comprise mutually opposed side spacer tabs 197 and 198 struck from first and second cushion panels 178 and 180 respectively and formed integrally with first and second platform panels 176 and 182. A bracing tab 196 is preferably also struck from first platform panel 176 and is formed integrally with partition panel 122.

Turning now to the construction of the carton as illustrated in Figures 8a to 10. Again, it is

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anticipated that the carton of this embodiment of the present invention can be formed by a series of sequential folding and gluing operations in a straight line machine so that the carton is not required to be rotated or inverted to complete its construction. Again, the folding process is not limited to that described below and may be altered according to particular manufacturing requirements.

Turning in particular to Figure 8A, first and second side wall panels 112 and 116 are respectively folded about fold lines 146 and 148 in directions Y2 and Y1 respectively so as to be in a substantially perpendicular relationship to first end wall panel 114. First and second glue flaps 111 and 120 are similarly folded about fold lines 144 and 150 in directions Y4 and Y3 so as to be in a substantially perpendicular relationship to the corresponding side wall panels 112 and 116 as illustrated in Figure 8B. Base end flaps 126 and 130 are folded inwardly out of the plane of base wall panel 128 about fold lines 158 and 162 into a substantially perpendicular relationship to base wall panel 128.

Referring now to Figure 8B, in this embodiment, glue is preferably applied to the outer face of glue flaps 111 and 120 as shown by shaded portions G, although it is anticipated that in other embodiments that other known securing means may be used. Base wall panel 128 is then folded out of alignment with first end wall panel 114 about fold line 160 in a direction Y5 and into substantially perpendicular arrangement with respect to first end wall panel 114. Second end wall panel 118 is folded about fold line 164 out of alignment with base wall panel 128 in a direction Y6 so as to form the box structure as illustrated in Figure 8C with only the top wall structure open.

Turning now to the construction of the partition structure and cushion structure as illustrated in Figures 9A, 9B and 9C. In this embodiment, glue G is applied to a lower portion of partition panel 122 and second cushion panel 180 is folded out of alignment with first cushion panel 178 about fold line 193 in a direction Y7 such that glue flap 184 is secured to the partition panel 122 as illustrated in Figure 9B. The cushion structure is then manipulated such that fold line 193 is moved towards fold line 191 and fold lines 192 and 194 are moved out of overlying register so as to form a tubular arrangement, as illustrated in Figure 9C.

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Inner and outer cushion spacer tabs 197 and 198 meanwhile are arranged so as to be in substantially parallel relationship with partition panel 122 as is illustrated in Figure 9C. In those embodiments with bracing tab 196, this tab is folded downwardly into the tubular structure to form a limit stop or crumple zone, depending on the preferred requirements of the user. Glue flap 124 may also be folded along fold line 190 so as to be substantially perpendicular to partition panel 122. However, dependent upon the type of articles to be introduced, this folding operation may be deferred until the carton is loaded.

Turning now to Figure 10, partition structure 110b is introduced into partially erected outer sleeve 110a in direction Y8 until fully seated within the outer sleeve. Spacer tabs 196, 197 and 198 ensure that first and second platform panels 176 and 182 are placed and maintained in substantially spaced parallel relationship to base wall panel 128 as shown in Figure 11. The construction of the outer sleeve enables tear flap portions 186a and 186b to be secured together so as to form a substantially continuous tear flap.

Once the partition panel is in place, the carton is loaded with articles in the compartments either side of partition panel 122, and top wall flaps 134, 136 and 138 are folded inwardly about fold lines 166, 168 and 170 respectively. Glue is then applied to the upper face of flaps 134, 136 and 138, and top wall panel 140 is folded inwardly so as to be adhesively secured to flaps 134, 136 and 138.

Articles (not shown) may then be removed from within the carton through the aperture formed by the tear flaps, in a similar manner to the previous embodiment, and as shown in Figure 11.

Turning now to Figures 12 and 13, there are illustrated two part blanks for forming a carton according to a third embodiment of the invention in which like parts have been annotated with like numerals where possible but with the addition of the prefix "2". Figure 12 illustrates the outer sleeve 210a of a two part blank and Figure 13 illustrates an inner partition 210b of the two part blank. The outer sleeve 210a and inner partition 210b are similar to the outer sleeve 110a and inner partition 110b of the second embodiment, so only the differences

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with respect to the second embodiment will be described in any further detail.

Referring now in particular to Figure 12, a further tear flap 287 is struck from panels 212 and 214 and spans fold line 246 therebetween and additional tear flap portions 289a and 289b are struck from panels 220, 216 and 218 respectively such that, when the blank is erected, a total of four tear flaps are provided.

Turning now to Figure 13, a second partition panel 284 is hingedly connected to second platform panel 282 in the place of glue panel 184 of the second embodiment. Transverse partition panels 223 and 285 are struck from first and second partition panels 222 and 284 along interrupted fold lines 227 and 289 respectively. In this embodiment, transverse partition panels 223 and 285 comprise tab portions 225 and 287 that extend into first and second partition panels 222 and 284 beyond fold lines 227 and 289 respectively.

The construction of the carton is illustrated in Figures 14A, 14B, 14C and 15 and is substantially identical to the construction of the carton of the previous embodiment with the exception that glue G is preferably applied in different places, for example proximate the upper and lower edges of first partition panel 222, and second partition panel 284 is folded about fold line 293 in direction Z1 so as to substantially overlie first partition panel 222 in register therewith. The partition structure is then in the condition illustrated in Figure 14B.

Referring to Figure 14C, the platform and cushion panels are erected as in the previous embodiment, and the transverse partition panels 223 and 285 are folded along fold lines 227 and 289 in a direction Z2 so as to be substantially perpendicular to the composite partition panel formed by panel 222 and 284. Tabs 225 and 287 advantageously cooperate to ensure that transverse partition panels 223 and 285 are held in a substantially co-planar relationship

Turning to Figure 15, the partition structure is loaded into the outer sleeve in a direction Z3. Articles A (which in this embodiment are individual tablets) are then loaded into the four individual compartments formed by the partition structure and the top wall formed as in the previous embodiment. Access may then be obtained to any one of the compartments using

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tear flaps 286, 287, 288 or 289, shown in Figure 16, and the articles A are removed as in the previous embodiments. As in the preceding two embodiments, the cushion structure acts as a "shock absorber" so as to dissipate impacts the carton may have with foreign objects and thus reduce the risk of damage occurring to the tablets.

It will be recognised that as used herein, directional references such as "top", "base", "end", "side", "inner", "outer", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only; indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of the invention.

It should be understood that various changes may be made within the scope of the present invention, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape, alternative top and base closure structures may be used. It is envisaged that the partition structure of the second and third embodiments of the invention may be dispensed with such that a cushion structure formed from the platform panel(s), cushion panels and cushion spacer tabs.

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CLAIMS

1. A carton for packaging articles for example tablets, comprising an outer sleeve, an internal partition wall and a cushion structure connected to the partition, wherein the cushion structure comprises a platform panel spaced from one of the walls of the outer sleeve and extending outwardly from one side of the partition wall and access means struck from the outer sleeve to gain access to the carton interior.
2. A carton according to claim 1 wherein the access means is a tear flap provided on the outer sleeve.
3. A carton according to claim 2 wherein the tear flap is located such that the lower edge thereof is substantially in register with the platform panel.
4. A carton according to any preceding claim wherein a further platform panel extends outwardly from the other side of the partition wall.
5. A carton according to any of claims 1 to 4 wherein the cushion structure is connected to the partition wall by a bracing tab extending from the partition wall to limit movement of the partition wall.
6. A carton according to claim 5 wherein the bracing tab engages an aperture provided in the platform panel.

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7. A carton according to claim 6 wherein a support tab is struck from the platform panel and defining, at least in part, the aperture, the support tab is folded when the bracing tab is inserted into the aperture so as to engage the wall of the outer sleeve from which the platform panel is spaced.
8. A carton according to any of claims 1 to 4 wherein the platform panel is formed integrally with the partition wall.
9. A carton according to any of claims 1 to 4 wherein separate first and second platform panels are provided.
10. A carton according to claim 9 wherein cushion spacer tabs are provided at the outer edges of the first and second platform panels, so as to space the platform panels from the wall of the outer sleeve.
11. A carton according to claim 9 or claim 10 wherein first and second cushion panels are hingedly interconnected to provide a collapsible tubular structure connected to the first and second platform panels respectively.
12. A carton according to any preceding claim wherein a further transverse partition wall is provided in substantially perpendicular relationship to the partition wall.
13. A carton according to claim 12 wherein the transverse partition wall is hingedly

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connected to the partition wall.

14. A carton according to claim 13 wherein the partition wall is a composite comprising two partition panels, each partition panel having a transverse partition panel hingedly connected thereto.

15. A carton for packaging articles for example tablets, comprising an outer sleeve, an internal partition wall, a platform panel spaced from one of the walls of the outer sleeve and extending outwardly from one side of the partition wall and a spacer tab formed from the platform panel and extending downwardly from the partition wall to limit movement of the partition wall.

16. A blank for forming a carton for packaging tablets, the blank comprising an outer sleeve portion and inner partition and cushion portions, the partition portion comprising a partition panel having means for connecting to a platform panel of the cushion portion.

17. A blank according to claim 16 wherein the connecting means comprising a connecting tab integral with the partition panel arranged so as to engage a connecting aperture provided in the platform panel.

18. A blank according to claim 17 wherein a spacer tab is struck from the connecting aperture.

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19. A blank for forming an inner partition and cushion structure of a carton for packaging tablets, the blank comprising a partition portion and a cushion portion, the partition portion comprising a partition panel and the cushion portion being hingedly interconnected to the partition portion and comprising in series a first platform panel, first cushion panel, second cushion panel and second platform panel and wherein spacer tabs are provided so as to space the platform panel form a corresponding wall of the carton.
20. A blank according to claim 19 wherein first and second support tabs are formed integrally with the first and second platform panels.
21. A blank according to claim 20 wherein the first and second support tabs are struck from the first and second cushion panels respectively.
22. A blank according to claim 20 or claim 21 wherein a bracing tab is formed integrally with the partition panel.
23. A carton formed from a plurality of panels to form an outer sleeve comprising access structures and a second blank according to any one of claims 19 to 22 erected to form a partition and cushioning structure.
24. A carton according to claim 23 wherein the access structure is spaced from the base edge of a panel of the outer sleeve such that the aperture formed, when the access structure is opened enables articles resting on a platform panel of the cushion structure to be removed

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therefrom.

25. A carton for packaging articles such as tablets comprising an outer sleeve, and a cushion structure, wherein the cushion structure comprises a platform panel spaced from one of the walls of the outer sleeve by first and second cushion spacer tabs hingedly connected to the side edges of the platform panel.

26. A blank for forming a cushion structure for cushioning articles within a tubular carton comprising a cushion portion comprising in series a first platform panel, first cushion panel, second cushion panel and second platform panel and wherein spacer tabs are provided so as to space the platform panel from a corresponding wall of the tubular carton.

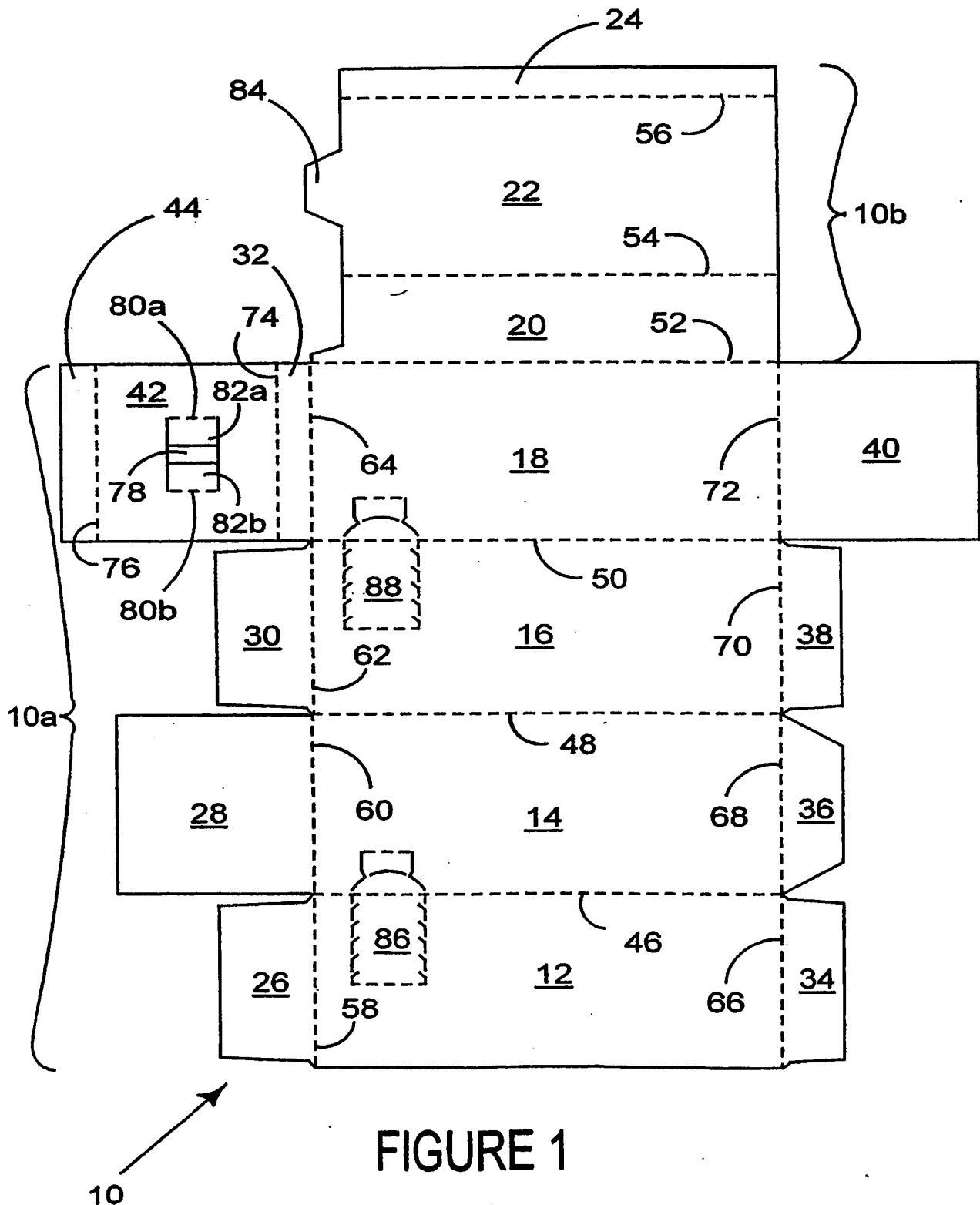
27. A carton comprising an outer sleeve, an internal partition wall and an associated cushion structure, wherein the partition has a bracing tab for engaging at least a part of the cushion structure to retain the cushion structure in an erected position, wherein the cushion structure includes a platform panel and a support tab formed from the platform panel and hingedly connected thereto, and wherein the bracing tab is received in an aperture defined by the support tab and is disposed in engagement with the support tab to retain the support tab in a folded, supporting position.

28. A carton comprising an outer sleeve, an internal bottom cushion structure and a partition wall connected to the cushion structure and to the outer sleeve to bear the load of contents placed on the cushion structure, wherein the cushion structure includes a pair of

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raised platform panels extending laterally from opposite sides of the partition wall.

29. A carton according to claim 28 wherein the length of each of the platform panels along the width of the partition wall is greater than a half of the width of the partition wall.

$$\frac{1}{11}$$


SUBSTITUTE SHEET (RULE 26)

2/11

FIGURE 2A

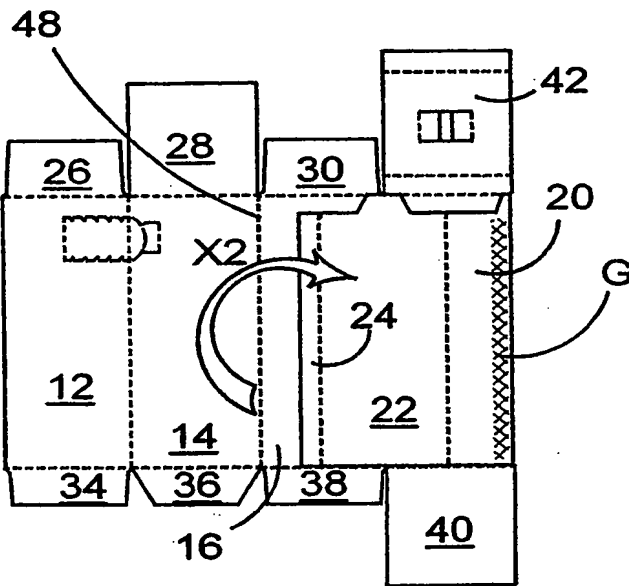
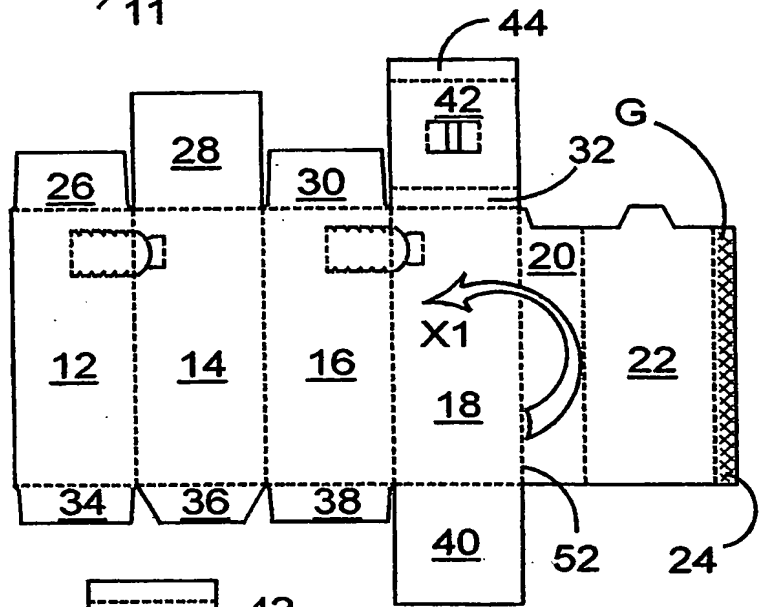


FIGURE 2B

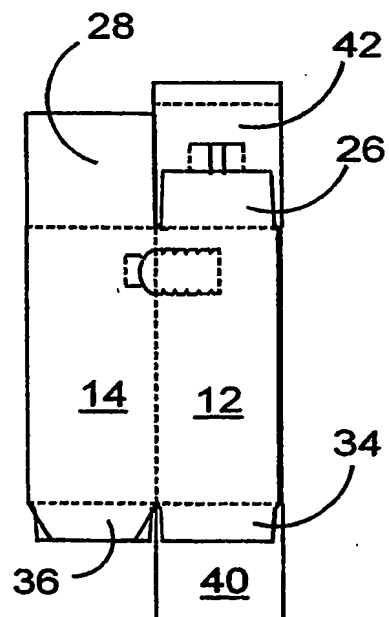


FIGURE 2C

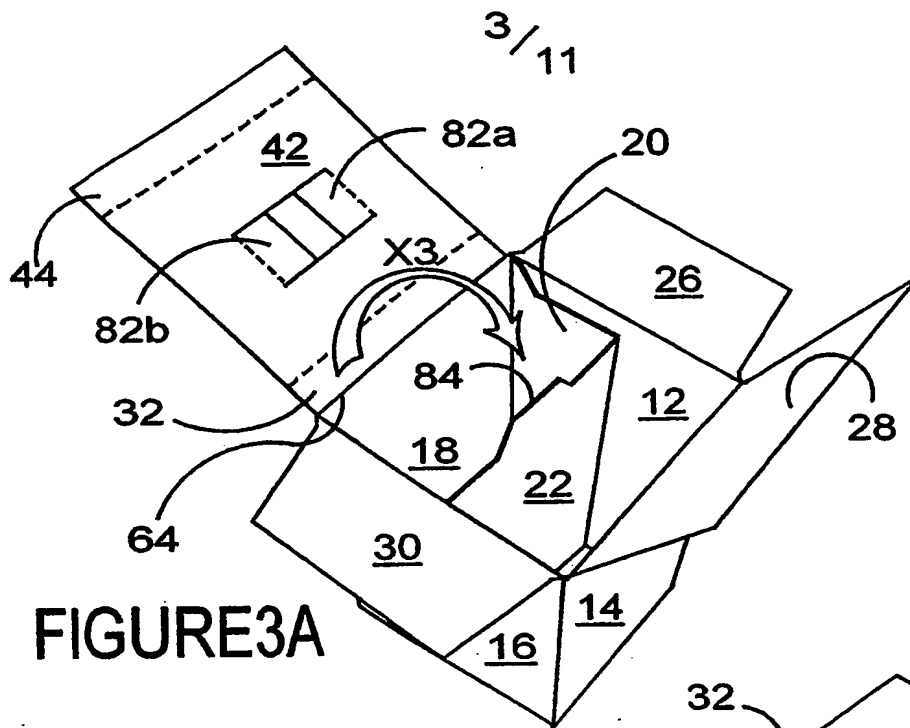


FIGURE 3A

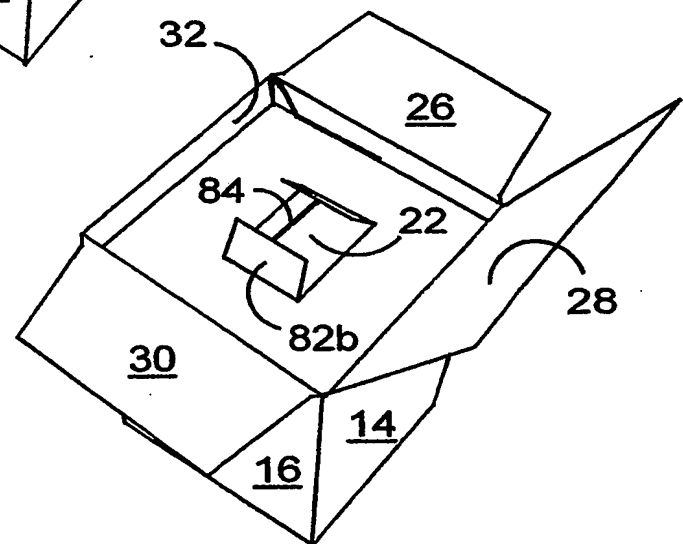


FIGURE 3B

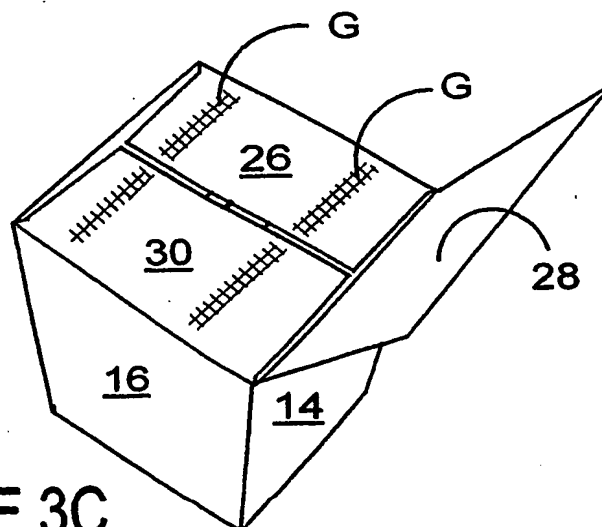


FIGURE 3C

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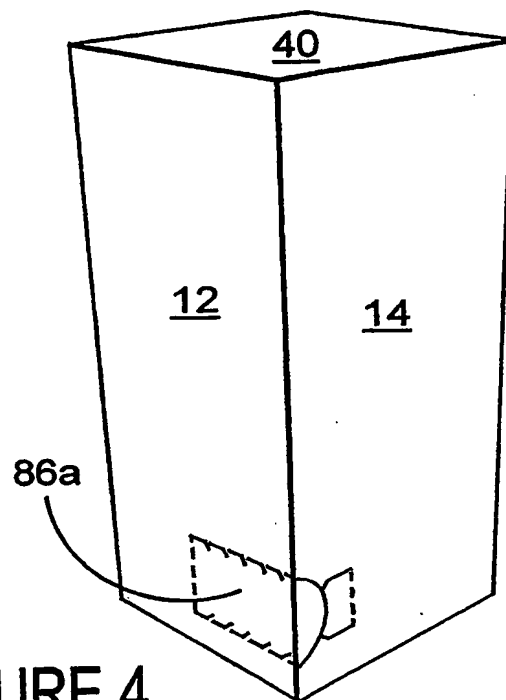


FIGURE 4

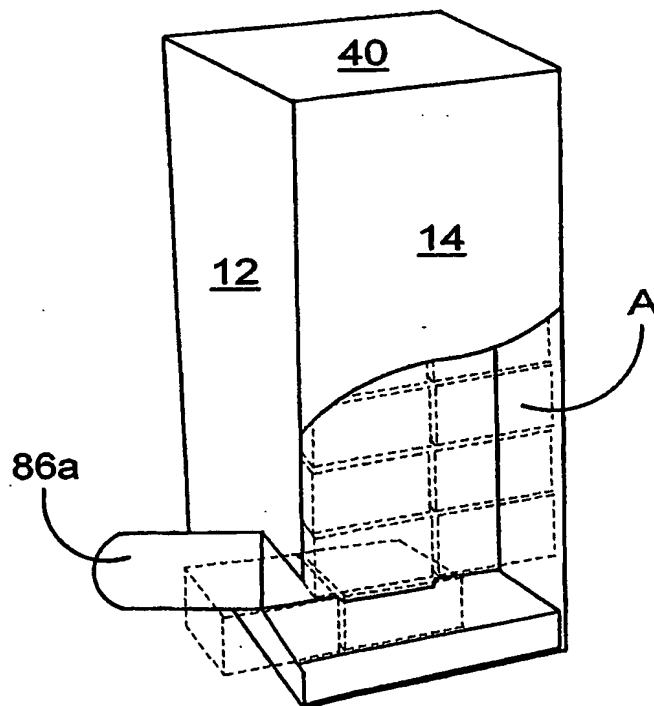


FIGURE 5

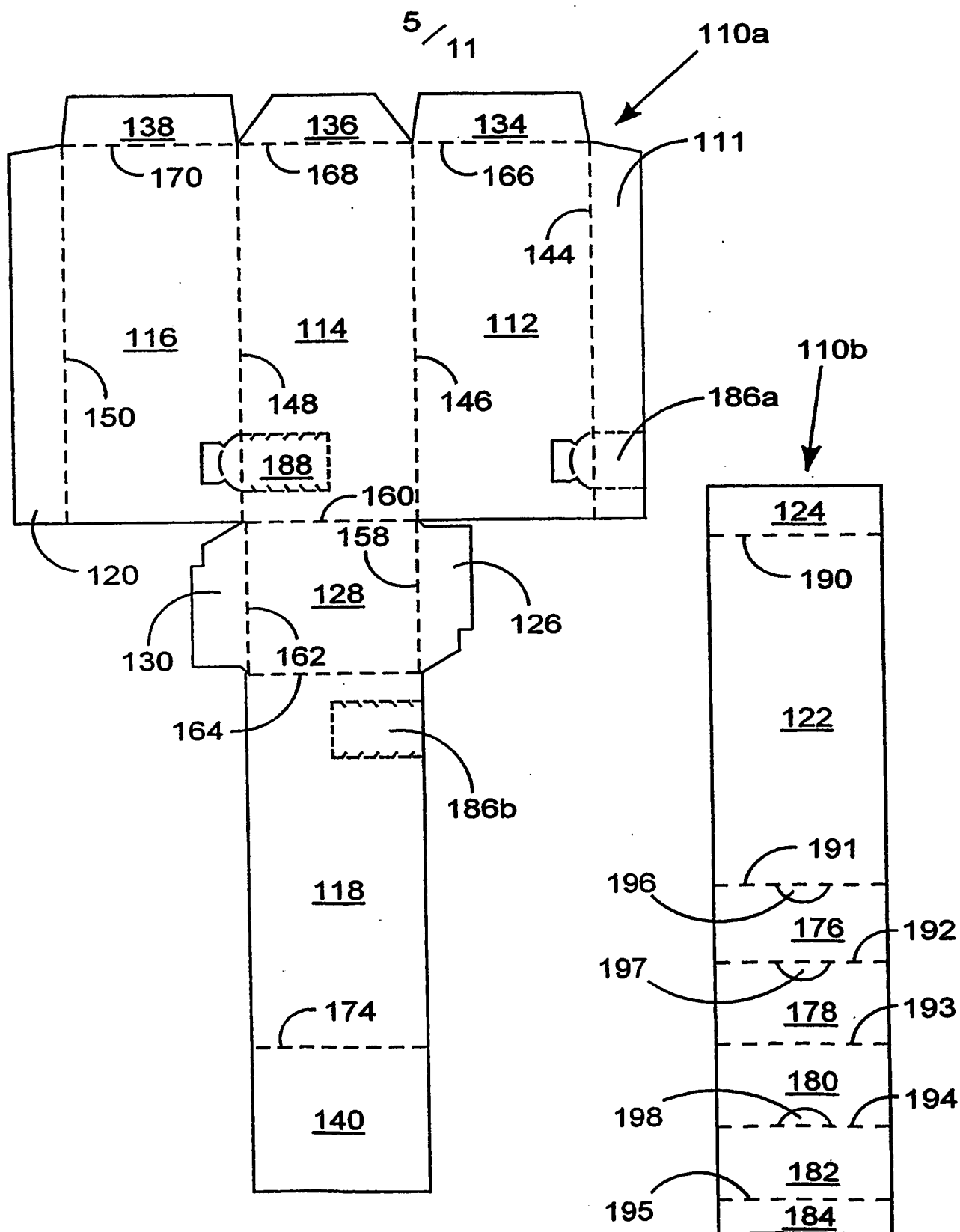


FIGURE 6

FIGURE 7

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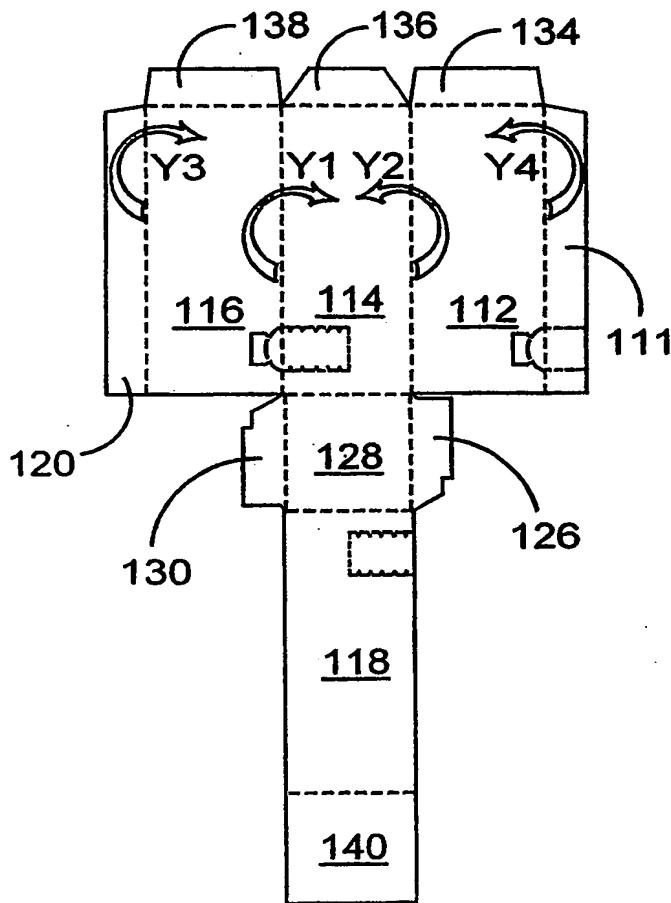


FIGURE 8A

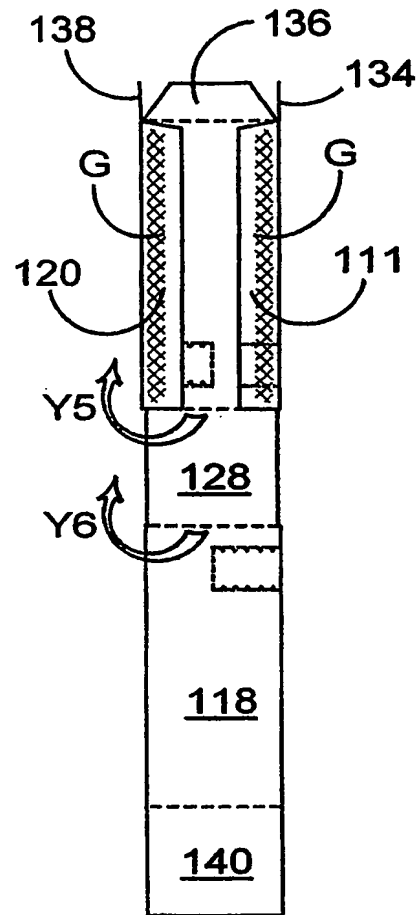


FIGURE 8B

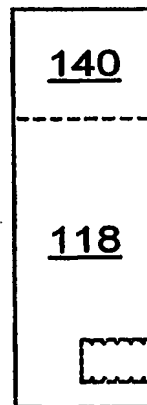


FIGURE 8C

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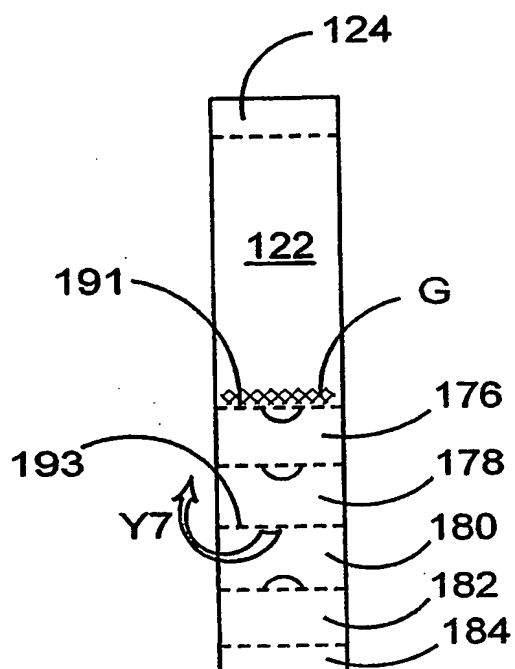


FIGURE 9A

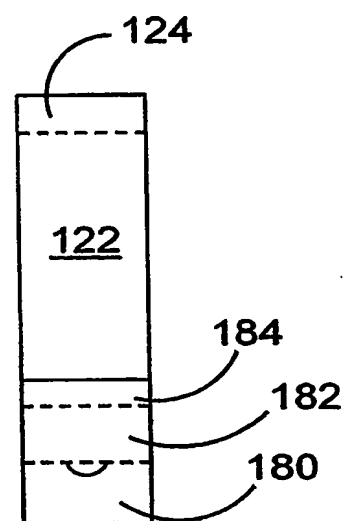


FIGURE 9B

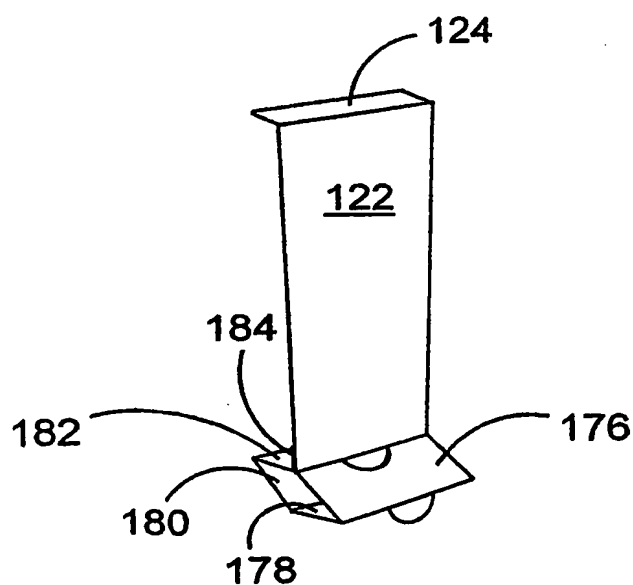


FIGURE 9C

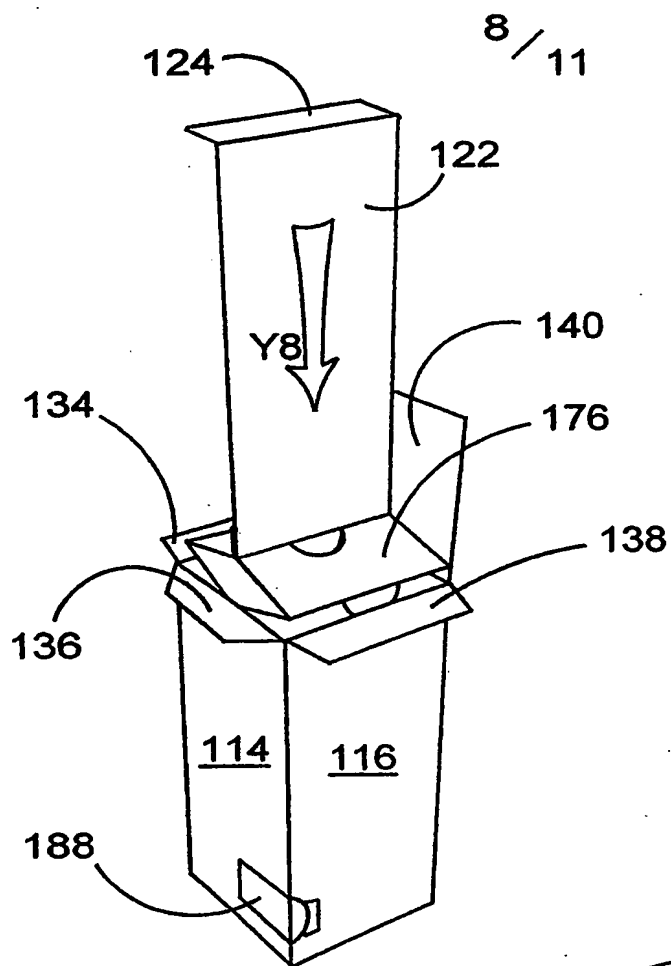


FIGURE 10

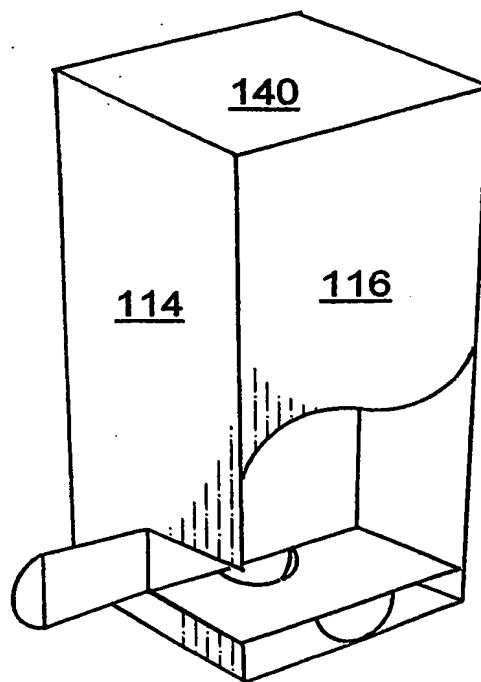


FIGURE 11

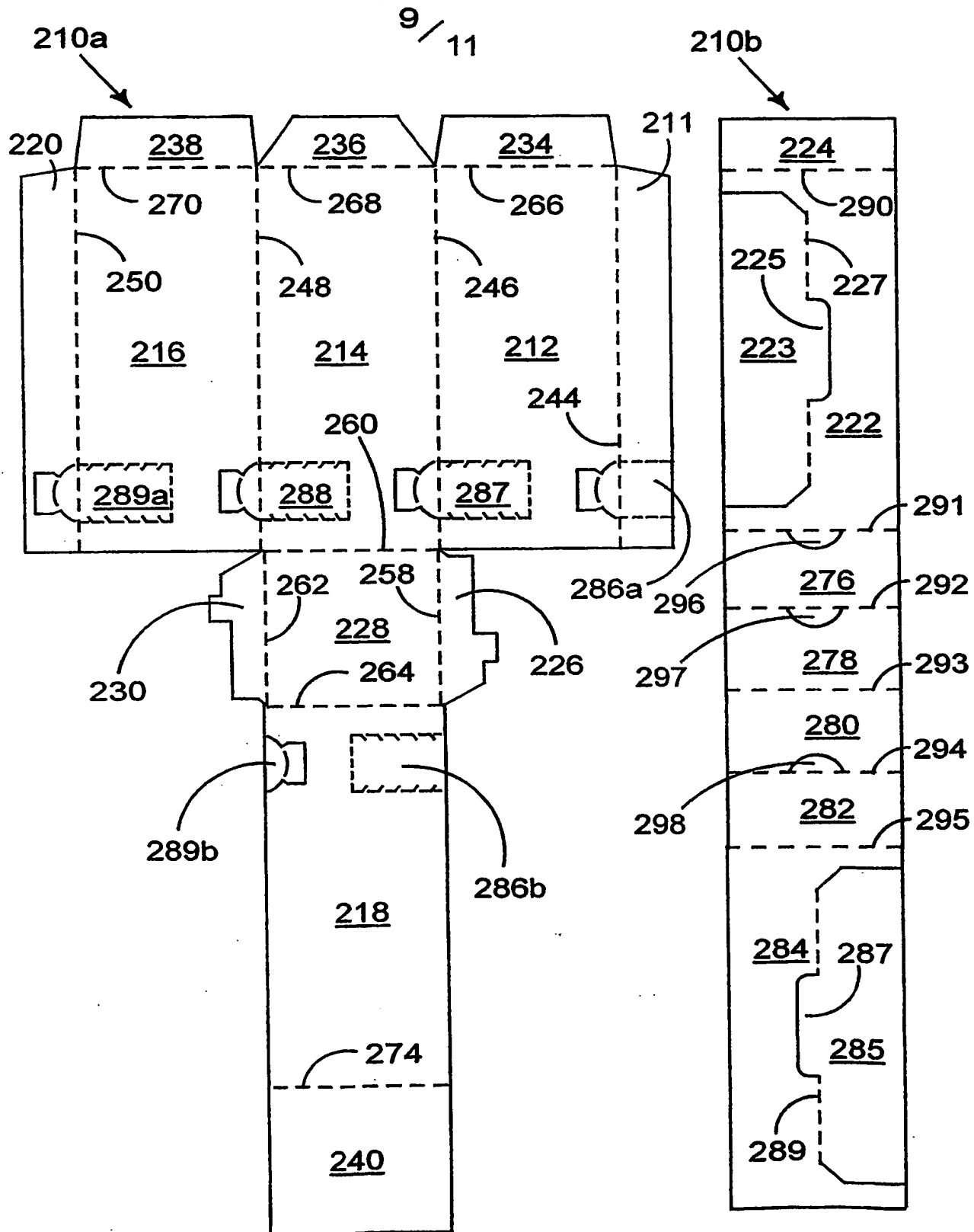


FIGURE 12

FIGURE 13

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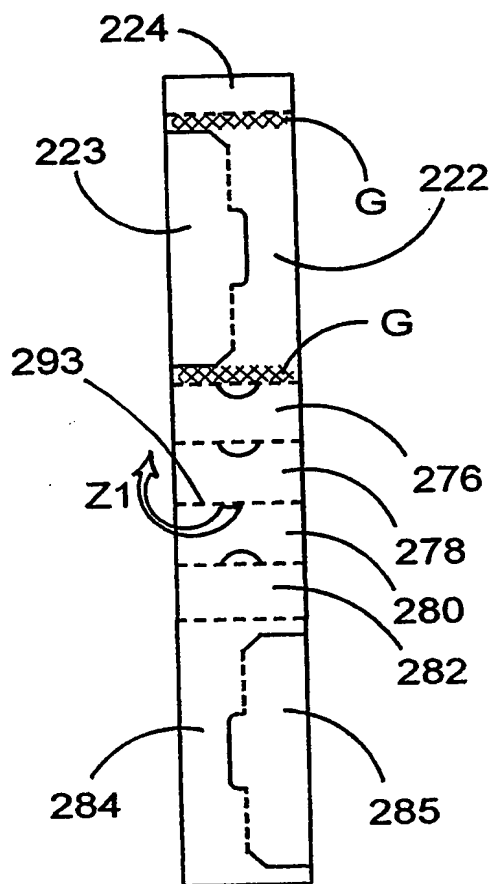


FIGURE 14A

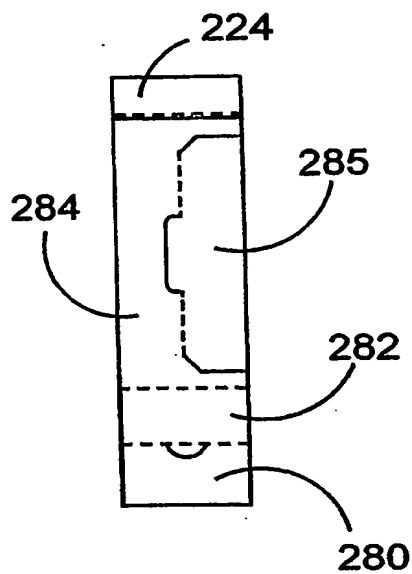


FIGURE 14B

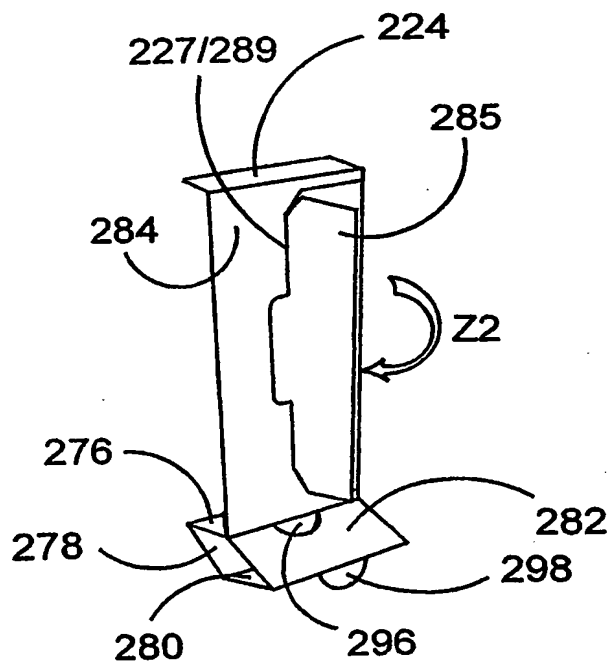


FIGURE 14C

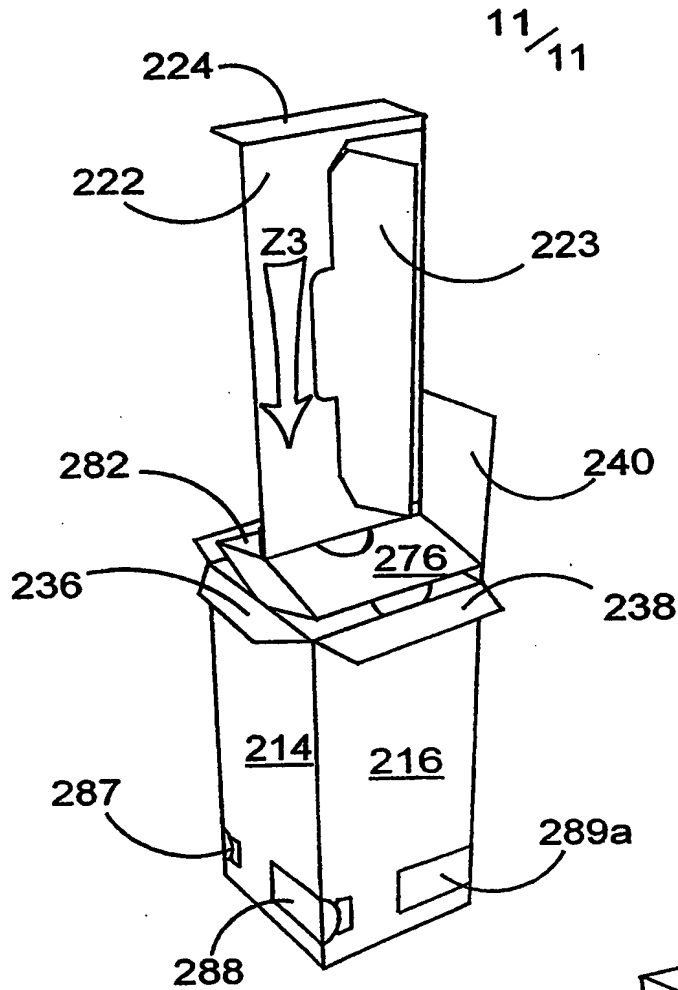


FIGURE 15

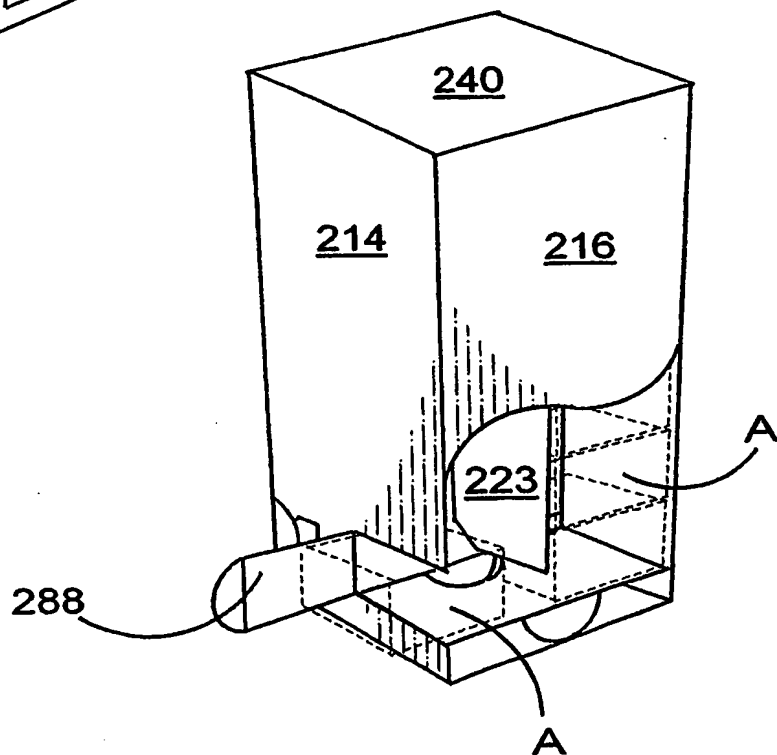


FIGURE 16

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/31827

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D5/48 B65D5/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	FR 1 497 652 A (ROCHETTE CENPA) 13 October 1967 (1967-10-13) the whole document	1,4,8,9, 12-14,26 2,3 19
X A	JP 07 125745 A (SUNTORY LTD) 16 May 1995 (1995-05-16) figure 13	1,4,9-11 19
X	FR 1 427 897 A (ETABLISSEMENTS TAILLEUR) 22 April 1966 (1966-04-22) the whole document	16,17, 28,29
X A	FR 1 489 087 A (CARTONNERIES DE LUMBRES SOC IN) 21 July 1967 (1967-07-21) the whole document	1,4,9 15,27
	—/—	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

15 May 2002

Date of mailing of the international search report

04 06. 2002

Name and mailing address of the ISA

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Authorized officer

Fournier, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/31827

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	claims 1-3; figures	1
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	figures	
A	GB 434 145 A (CHARLES AUGUSTUS FOX) 27 August 1935 (1935-08-27)	1
	figures	
A	US 5 938 109 A (DEWITT CARL ET AL) 17 August 1999 (1999-08-17)	15
	figures	
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 10, 31 October 1997 (1997-10-31) -& JP 09 142449 A (RENGO CO LTD), 3 June 1997 (1997-06-03)	15
	abstract	
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 06, 22 September 2000 (2000-09-22) -& JP 2000 085754 A (FUJI SEAL INC), 28 March 2000 (2000-03-28)	25
	abstract	
X	US 1 896 326 A (NORTHWAY) 7 February 1933 (1933-02-07) page 1, line 60 -page 2, line 51; figures 1-5	26
A	JP 11 130049 A (KAO CORP) 18 May 1999 (1999-05-18)	26
	figures	
A	US 4 120 443 A (GARDNER JEFFREY M ET AL) 17 October 1978 (1978-10-17)	26
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	figures	
A	CH 263 456 A (CAFAG CARTONNAGENFABRIK FREIBU) 31 August 1949 (1949-08-31)	26
	figures	
A	FR 2 223 985 A (BEGHIN) 25 October 1974 (1974-10-25)	26
	figures	

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/31827

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 1 898 646 A (TAYLOR ROBERT A) 21 February 1933 (1933-02-21) page 1, line 95 - line 98 page 2, line 121 - line 125; figures _____	27

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/31827

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,
no additional fees are to be refunded.

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-14 16-18 19-24 28-29

Subject I (claims 1-14, 16-18, 19-24, 28-29) relates to a carton with a partition and a cushion structure.

2. Claim : 15

Subject II (claim 15) relates to a carton having a partition wall, a platform panel extending from one side of the partition wall and a spacer tab.

3. Claim : 25

Subject III (claim 25) relates to a carton having a cushion structure spaced from one wall of the carton by two cushion spacer tabs.

4. Claim : 26

Subject IV (claim 26) relates to a blank for forming a cushion structure. The cushion structure comprises four panels and two spacer tabs.

5. Claim : 27

Subject V (claim 27) relates to a carton having a partition and a bracing tab which cooperate with a support tab.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/31827

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
✓ FR 1497652	A	13-10-1967	FR 91779 E FR 92690 E OA 2493 A	09-08-1968 13-12-1968 05-05-1970
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✓ DE 8814144	U	05-01-1989	DE 8814144 U1	05-01-1989
✓ CH 263456	A	31-08-1949	NONE	
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